DOCUMENT RESUME

ED 174 285 IR 007 523

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TITLE	R & D Products: Search, Retrieval and Utilization.
SPONS AGENCY	National Inst. of Education (DHEW), Washington, D.C.
PUB DATE	Apr 79
CONTRACT	400-76-0089
NOTE	21p.; Paper presented at the Annual Meeting of the American Educational Research Association (San Francisco, California, April 9-13, 1979)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	*Educational Research; Elementary Schools; Evaluation; *Information Retrieval; *Information Utilization; *Search Strategies
IDENTIFIERS	*Florida Education Research and Development Program

ABSTRACT

The Florida R & D Utilization Project has two major goals: to provide schools with access to the best available R & D products and practices to resolve local needs, and to assist schools in developing a capacity for diagnosing and resolving instructional and other problems. This paper describes the 7-step conceptual model that governs the activities of the central search agency that was established to help the 28 participating elementary schools accomplish the first goal. Sections of the paper correspond to steps in the model: describing the problem, interpreting the problem statement, conducting the search, retrieving the outcomes, screening the outcomes, considering the options, and preparing for adoption/adaption. A project evaluation related to utilization is also presented, as well as general implications suggesting that it is possible to develop and implement a program of R & D utilization which is based upon local school problem solving. (Author/JD)

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R & D Products: Search, Retrieval and Utilization

Paper Prepared for the Symposium:

Recent Findings from the Florida Linkage System:
Implications for R & D Utilization and Self-Renewal in Schools

American Educational Research Association Annual Meeting
San Francisco, April 9-13, 1979.

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IR001523

R & D Products: Search, Retrieval and Utilization[1]

The Florida R & D Project has two major goals. First, to provide schools with access to the best available R & D products and practices to resolve local needs, and second, to assist schools in developing a capacity for diagnosing and resolving problems instructional and otherwise.

This paper will describe the procedures used to accomplish the first goal. To provide schools access to effective R & D outcomes a central search agency was established called "Options from R & D" (ORD). As its name implies, the mission of ORD was to answer requests from schools with information regarding the availability and relevance of findings and products which had resulted from previously accomplished research and development efforts. The problems described came from the twenty-eight elementary schools participating in the project. It arose out of the attempts of school personnel to find a solution to the circumstances of low student achievement in arithmetic, language, reading or some combination of these basic skills. The problems identified by the schools were quite diverse in character, and also varied a good deal in the quality of their descriptions.

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[1]The work described in this paper was supported by the National Institute of Education, HEW, under Contract Number 400-76-0089.

The Model of R & D Utilization

The conceptual model governing the activities of Options from R & D (ORD) may be described as having the following steps:

1. A description of the school's problem, its context and background, is prepared by school personnel with the help of linkage agents.
2. The description is received by ORD, and the nature of the problem noted. For example, the problem may be "a substantial proportion of children entering the first grade reading program are deficient in oral language skills."
3. Having interpreted this problem, ORD then conducts a search for R & D outcomes bearing upon it. For example, the search might center upon research evidence relating early oral language to the learning of reading skills and to reading achievement. It would also include R & D products which have been developed to help schools overcome pupil weaknesses in oral language.
4. The outcomes of the search are expected to be several different methods, or options, for approaching a solution to the problem as stated. For example, the R & D products aimed at the problems of early oral language weaknesses might include some specially prepared supplementary materials, a course of inservice education for teachers, or both.
5. Following some screening of the alternative outcomes which have been located, to eliminate those which are obviously infeasible

in the local situation, the findings of the search are reported back to the initiating school.

6. In considering the options suggested by ORD, school personnel may examine sample materials, visit demonstration sites when these are available, and/or invite R & D producers to give a presentation on their programs.
7. Once a solution strategy is chosen, an implementation plan is prepared which specifies the necessary adoption activities and resources. Implementation activities may include the acquisition of materials, the employment of consultants for technical assistance, and specific kinds of inservice education and problem-solving activities.

The steps described are summarized in Table 1.

Table 1

List of Seven Steps in R & D Search-Retrieval-Utilization

1. Describing the Problem
2. Interpreting the Problem Statement
3. Conducting the Search
4. Retrieving the Outcomes
5. Screening the Outcomes
6. Considering the Options
7. Preparing for Adoption/Adaptation

This seven-step model is basically a workable one, but it is worthwhile to indicate the places where some difficulties did occur in practice and where accordingly some elaborations of procedures are probably desirable in looking to the future.

The Search Process

Problem description and interpretation. The kinds of problems identified by schools were highly varied in character. Most frequently described problems were those pertaining to reading instruction, and specifically to the problem of delivering differential instruction to children with widely different repertoires of prerequisite skills. From the point of view of the search agency (ORD) most schools seemed to have gone through a systematic problem identification process, however the quality of the problem statements received by ORD varied greatly.

Thus, there were some real difficulties in step 2, interpreting the problem. The written descriptions submitted by the schools to ORD were not always easy to understand. We attempted to overcome these difficulties in two ways: (1) by asking the schools to provide within their description more "background" information about the current status of their instruction in the problem area; and (2) by conducting one or more telephone interviews with key school personnel. Both of these measures, we found, turned out to be distinct improvements over the simple "description of the problem" as originally conceived. The pinpointing of the problem involves some complex judgments and is not always easy to achieve.

Conducting the search. The search was conducted by reference to available sources such as the NIE Catalog of R & D Projects, the National Diffusion Network booklet on Programs that Work, reports of projects developed in Florida, nationwide systems such as ERIC and others. Searching was conceived as primarily a matter of matching categories that may be used by the requesting school with categories that are used by various

catalogs or listing systems. Assuming that the problem had been identified, conducting the search was not an entirely simple matter. Sometimes the match between the school's stated problem and categories of projects and outcomes was obvious, as when a school stated that they wanted a system of arithmetic instruction which made possible the diagnosis of individual student weaknesses. On other occasions, it was not at all easy, as when schools said they had to deal with many children with disadvantaged backgrounds. The difficulty with that kind of problem identification is that the definition of "disadvantaged" is by no means consistent, and is likely to vary from place to place. A number of R & D programs, for example, have been successful in dealing with "disadvantaged" children of the inner city. Is that the same, or a different kind of "disadvantage" that may be found in some remote rural communities in Florida? There is apparently no answer to this question derived from empirical research; one may say there is a gap here, so far as research outcomes are concerned.

Actually, there are many gaps in research outcomes. One cannot expect that every specific problem identified by a school will have been directly investigated. Therefore, the search itself must include not only specific research products (instructional materials, procedures), but also research findings which are generalizable. An example of a generalizable research finding, applicable to the teaching of reading, yet still greatly resisted in practice, is the salutary effect on reading progress of the early establishment of automatic decoding skills. The general applicability of this finding, we came to believe, was highly important to communicate, particularly since the products which incorporate the finding are unusually hard to find.

Discrepancies with the model. In brief, we found several aspects of the search portion of our task to require some elaborations not obvious in the abbreviated steps of Table 1. It was often difficult to understand the problem from a written description provided by a school. Better interpretation was achieved as a result of gathering a larger context of information both in written form and by oral discussion. As for the search, it also took on a more elaborate character than is implied by the idea of matching categories of problems with indexes of research projects. New categories were sometimes found to be needed, which could be discovered to be empty of R & D outcomes. Generalizable research findings needed to be searched, located, and interpreted as to their applicability to specific school problems.

Retrieving and Screening R & D Outcomes

Screening requirements. Once a category of R & D outcome has been identified and looked up, the finding or product can generally be located and obtained, although some delay may be experienced. However, it must be noted that some programs described in the NIE catalog are not available. Generally speaking, though, if the developers and publishers are convinced of the seriousness of the interest in their product they do not hesitate to make them available. In most cases when the options identified for schools were published materials, little difficulty was experienced in making possible the supplying of sample materials and a demonstration of their use by employees of the producers.

However, before this stage was reached, a process of screening had to be conducted. The reason for this procedure was the necessity of

matching a number of characteristics of a product with some of the requirements of a local problem. For example, a particular reading program for grades K-1 might appear to meet requirements, but then be seen as incompatible with a mandated reading program for grades 2-6. A particular set of supplementary materials for fourth grade arithmetic might appear to do a good job of teaching mathematics application skills, but then be seen also to call upon skills not currently being taught until grade 6. A program of language learning may have good evidence of effectiveness, yet require an expenditure of funds which are out of the question for a particular school.

One important function of screening then, is to make possible a description of new practices, some of which may require changes from current practices. In order to carry out this part of the process of selection, we developed a Product Description Checklist, which could be used for the screening of the products, and also at a later time as information entering into the school's selection procedures. The description contained in the Checklist was in terms of categories like the following:

1. Classroom organization - is the product normally intended for teaching in small groups, tutoring, individual student work, or what?
2. Student activities - when the product is used, are the students primarily engaged in reading, reciting, taking tests, or what?
3. Teacher activities - in using the product, is teacher planning aided by a teacher's manual? Does the teacher do a lot of questioning, record-keeping, testing?

4. Administration - does the principal play some particular role, when this product is used?

5. Parental involvement - how much and what kind?

The selection of optional R & D products also involved seeking and reporting three general features which we came to consider essential indicators of quality. These were answers to the following questions:

1. Does the product have a sound rationale? For example, if the materials are intended to teach concepts to kindergarten children, is there reason to believe that the concepts chosen will be useful ones?

2. What evidence is there that the product is convenient for use in the educational settings for which it is intended? Sometimes, certain kinds of quantitative data may be available as an answer. More frequently, descriptive statements are made.

3. What evidence is there that the product is effective for learning in the setting for which and with the pupils for whom it is intended? This of course is the quality generally referred to as "validity."

Screening of products and other R & D outcomes in the ways described was found to be an activity which was worthwhile to carry out before the reporting of the search results to schools. These procedures helped to avoid the reporting of too great a number of options, and thus to reduce the likelihood that they would be perceived as irrelevant.

Availability of information. Generally speaking, a product or finding which as a research-based origin is likely to yield useful information. This is particularly true, for example, when the matter of validity or effectiveness is to be considered. ORD placed considerable emphasis on

this feature of R & D products and outcomes.

Relevant information about R & D products was readily available from the NIE Catalog of Educational Products. This information, we found, frequently needed to be updated. The best quality of information including data on tested effectiveness, was to be found in the books entitled Educational Programs that Work. The careful review of programs undertaken by the joint USOE-NIE panel resulted in the reporting in these volumes of accurate and dependable indicators of program validity.

In contrast to the availability of learning effectiveness information from federally funded R & D efforts, reports of such effectiveness from private or independently developed products were generally unavailable. This was true even when the products themselves appeared to be carefully developed beginning from a convincing conceptual base. Commercial publishers of curricular materials seldom are able to provide empirical evidence of product effectiveness.

Departures from the conceptual model. In the activity of retrieval of R & D findings and products, then it would appear that some elaboration of the steps of the original model is necessary. The process of finding an appropriate match between the school's problem and a relevant R & D product or finding requires more than a simple identification of category names. Screening of the products is necessary, and this kind of screening invcives interpretation of both the R & D outcome and the factors at work in the school situation. As for selection of the R & D product, the catalogs which exist are on the whole, quite good for the purpose. For choices from a wider set of products than those produced by federal funding,

information about learning effectiveness is frequently unavailable. The selection process must at least take into account the scarcity of good empirical data in this area.

R & D Utilization

Considering the options. In response to each problem statement prepared by the schools a package of information was developed, consisting of three parts. These were (1) a written analysis of the problem as understood by ORD, stating the findings of research conducted in the problem area, or the lack of such research; (2) a short description of suggested R & D products and practices and the rationale for choosing these; (3) an appendix of in-depth descriptions of the suggested R & D products including the Product Description Checklist for each which identified the major features of the product. This Checklist could be used in comparing the R & D products to current local practice. In addition to receiving the initial response package, schools were encouraged to examine sample materials, visit demonstration sites when available and feasible, and invite R & D developers to make presentations describing their products.

There is evidence that the majority of our schools went through a relatively detailed process in examining the options suggested by ORD. The result of the selection process may be summarized as follows: of the twenty-nine schools originally targeted three discontinued their participation as field test sites because of political reasons internal to their school districts. One school submitted no formal problem statement to the search agency but identified, with the help of ORD personnel,

a research product matching the local problem. Of the remaining twenty-five schools fifteen adopted at least one of the R & D outcomes proposed by ORD; two others adopted an ORD-proposed solution along with a product or program which they had discovered on their own.

Eight schools adopted other options, generally after consideration of those proposed by ORD. Three did so on the basis of information shared with them by other field test sites where a solution in their problem area had been successfully adopted previously. Two decided on a program suggested by their linkage agent; two others found a program on their own. Only one school developed its own solution. However, it is interesting to note that of these eight schools, at least seven did select an R & D product.

The major factors which influenced school personnel in selecting specific options were identified as being the ORD Response document, visits to demonstration sites, school visits of program representatives, consultation with ORD personnel and recommendations by teachers knowledgeable of a program.

In a significant minority of schools, site visits to demonstration schools proved particularly important in helping school personnel to choose among options. In several cases the selection process included repeated negotiation and communication between ORD and the school. One set of options would prove inadequate, another would be initiated - and so forth, until a solution was found.

Discrepancies with the conceptual model. It had been anticipated that the package of options suggested by ORD would provide a "bag of goodies"

from which the schools would select their solution. As the data indicates a significant minority chose a program outside of those proposed by ORD.

Another factor not anticipated in the model relates to the repeated negotiation between ORD and the school in the process of "considering the options." ORD personnel expected to provide technical assistance and clarification to schools regarding the response package and the suggested options. However, some schools continued the identification of their problem on the basis of the options proposed to them by ORD. In several instances the option finally chosen (either suggested by ORD or by other sources) did only marginally relate to the problem originally identified by the school. (In one extreme case a reading problem became a math problem in the course of these negotiations.)

In considering options it would appear that some elaboration of the model is required. The process of selecting the appropriate solution demands more than simple review and analysis of each product description. Flexibility on the part of the search agency is essential, and a willingness to work closely with a school in selecting the appropriate solution strategy. In this process, visits to demonstration sites and presentations by product developers are important factors to reach a decision. More effective tools for the analysis of solutions and training in this area have to be made available to schools.

Preparing for adoption/adaptation. Having chosen a solution strategy the school prepared a detailed implementation plan. Up to $5,000 were available from the project to each school for the installation of the solution strategy. We believed from the beginning that the success of

the R & D Utilization was greatly dependent on the effort expended by each school in their planning. The guidelines developed for planning addressed three major issues: implementation, evaluation and human and financial resource requirements. To prepare the plan, schools had to deal with questions regarding required program and supplementary materials, the changes in curriculum organization, the training and technical assistance needs and the necessary activities, and support services. They also had to specify a timeline for implementation and the personnel responsible for each task in the implementation process. The plan for evaluation included designs for both formative and summative evaluation.

The school plans were reviewed by three experts, including an ORD staff member, who independently rated these plans and commented on the strengths and weaknesses of each. Schools revised their plans on the basis of these reviews.

Difficulties with the model. In this phase - "Preparing for adoption/adaptation" - it appeared that schools had problems developing sound solution implementation plans. Linkage agents and the developer or consultant of the chosen solution had to provide extensive technical assistance in the preparation of the plans. Even so, the expert review of the plans often suggested that problems could arise because of unrealistic timelines, inadequate training of staffs, and insufficient maintenance support. Planning for evaluation appeared to represent an even greater problem to schools and demanded special assistance in almost all instances. In general, we found that we had to revise our guidelines for the implementation plans in order to improve our directions to schools in their

planning efforts. In addition, it was seen as necessary to have available to schools a network of technical assistance in support of this planning phase.

Project Evaluation Related to Utilization[2]

One of the assumptions underlying the Florida R & D Utilization Project states that the successful use of new practices is dependent on the degree of involvement of those who are supposed to implement these practices. As part of the total project evaluation, two survey procedures were developed for the collection of data related to this assumption: a Solution Acceptance Survey Instrument and a Status Survey Instrument.

The Solution Acceptance Survey was designed to determine within each school (1) the locus of the decision to adopt a given research product as a solution to the identified problem; (2) the degree to teacher participation in this process; and (3) the subsequent degree of acceptance of the solution. The instrument was administered in the fall of 1978 to 400 faculty and staff (95% of them teachers) of twenty-four schools participating in the project. Data from twenty-one of these schools is presently available and includes 320 respondents, all returning teachers or administrators who expected to be involved in the implementation of the chosen solution.

A summary of the results of this survey includes the following points:

- The majority of respondents felt that they had had either some or a great deal of influence on the final decision about the adoption of a research product.

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[2]The evaluation data quoted in this section has been collected and analyzed under the direction of Dr. Garrett Foster, Department of Educational Research, Development and Foundations, Florida State University.

- They also acknowledged having been either somewhat or considerably involved in the FLS - specified activities which are supposed to lead up to this decision (identifying problems, setting goals and analyzing alternate solutions).
- The involvement of school personnel was greater in the identification of problems than it was in goal-setting, and greater in either of these than in the analysis of alternat solutions.
- The respondents were largely positive about the value of the chosen program for their school. However, the majority reserved judgment about whether or not it would resolve the identified problem.
- Faculty and school administrative staff also felt enthusiastic, or at least cautiously optimistic about participating in the chosen program.

Data from the Solution Acceptance Survey also suggested a strong relationship between the involvement of faculty and staff in problem identification and solution activities and their enthusiasm for the program and outlook on its chances for success. In general, in schools where faculty and staff involvement was high, these personnel were significantly more confident that the program would contribute to the solution of their problems and significantly more positive about their own participation.

The purpose of the Status Survey was to assess the progress of a school toward full implementation of its chosen solution. Currently data are available from only eight schools. Each of these schools had at least six

months experience with its adopted program at the time of the survey. The survey was administered to the total faculty and administrative personnel in the schools.

The 157 respondents were asked to rate the degree of implementation of various component activities of their school project and to indicate their own degree of satisfaction with these efforts. For each activity within each school, these responses were then analyzed to determine whether school personnel felt the activity had been extensively implemented, thought it had been little implemented, or had reached no consensus on this issue.

In these eight schools about half of the activities which related to the chosen solution rated extensive implementation. Just under a quarter of the activities elicited no consensus among the respondents. For another quarter, most respondents indicated that they did not know how extensive implementation had been. A very small minority (4%) of activities were given a "low implementation" rating.

On the satisfaction scale, results were similar although slightly more tentative. Around 40% of the activities were in the high satisfaction category; 23% elicited no consensus. In 35% of the cases, a majority of the respondents had no opinion or were unsure. Only a small minority (3%) of activities were classified in the "low satisfaction" category.

In general, there were many more positive than negative ratings for implementation of project activities and for satisfaction with them. However, the lack of consensus or the uncertainty of respondents on a

sizeable proportion of items seems to indicate that it takes time for the utilization activities to reach and affect all faculty in a given school. After six months experience with project implementation, many people are still unsure about these activities and have not yet formulated clear reactions.

There was considerable variability among the eight schools, reflecting the particular conditions of each site and of the solution chosen. In one school, 85% of the project activities received a high implementation score and 80% rated high in satisfaction; whereas in another school no activities were considered fully implemented or fully satisfactory, and for nearly 40% of the items faculty were unsure or had no opinion.

In general, activities related to the training of teachers and the utilization of research products in the classroom were considered to have been comparatively well implemented. Activities related to support, control and feedback scored less well and have apparently been slower to develop. These findings suggest that in the development of the implementation plan more attention needs to be given to the commitment support to schools after a program has been installed. More effective communication is also needed to make total school staffs aware of and supportive of a chosen program.

General Implications

Our experience suggests that it is possible to develop and implement a program of R & D Utilization which is based upon local school problem solving. Many resource banks, such as catalogs and indexes are available for search. However, providing direct access of these data bases to schools would not be appropriate, because extensive knowledge of research

content and development are needed in order to conduct the search and respond effectively to the users. Since there are still many "gaps" which have to be addressed by research, transformation of the R & D information is needed. Nominal matching of problems and solutions is not possible. Matching itself has to be an interactive process between search agency and users. It often involves extensive negotiation of the parameters of a problem and redefinition of the criteria which suggested alternatives have to meet.

A centralized agency which provides expert search, review and interpretation of R & D outcomes and products seems to facilitate the utilization of R & D in local schools. However, our experience also suggests that the degree to which users are involved in the decision making process influences their commitment to the adopted R & D outcome and its implementation.

In general, our findings corroborate the conclusions drawn in recent major studies on the dissemination-utilization process as it affects improvement-oriented change in schools. In their synthesis of five major studies on dissemination and change, Emrick and Peterson establish the following generalizations:

- Meaningful change occurs as a process, not as an event.
- Directed personal intervention is by far the most potent technical support resource and may be a necessary condition for many forms of utilization.
- Continuous personal participation of the implementing staff is needed to firmly root and sustain the utilization.
- Administrators occupy a crucial role in supporting the utilization process.

- Descriptive, instructional, and support materials are needed, particularly for utilizations including organizational or instructional changes.[3]

These generalizations are consistent with the learnings gained in the Florida R & D Utilization Project. People and agencies involved in the change process should consider these generalizations as a framework for planning or refining their approach to the search, retrieval and utilization of R & D outcomes.

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[3] Emrick, John A. and Peterson, Susan M. A Synthesis of Findings Across Five Recent Studies in Educational Dissemination and Change (Revised Version). San Francisco, CA: Far West Laboratory for Educational Research and Development (1978).